A new subspecies of Amazilia Hummingbird *Amazilia amazilia* from southern Ecuador

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SUMMARY.—A new subspecies of Amazilia Hummingbird *Amazilia amazilia* is described from the Ecuadorian Andes. It appears to be closest related to *A. a. alticola* from southern Loja and adjacent parts of Zamora-Chinchipe provinces in southern Ecuador.

The Amazilia Hummingbird *Amazilia amazilia* inhabits arid and semi-arid parts of western Peru and Ecuador. The five described subspecies differ mensurally and in the coloration of the bill, underparts, rump and tail. Weller (2000) described in detail the distinctive features and variation of these taxa, and suggested that the form *alticola* is better ranked as a full (biological) species. Based upon a preview of Weller's study, Schuchmann (1999) followed this, whereas Ridgely & Greenfield (2001) adhered to the more traditional classification, which is the course followed here and by Remsen *et al.* (2009).

During field work in southern Ecuador in the 1990s, expeditions by the Academy of Natural Sciences of Philadelphia collected specimens (Ridgely & Greenfield 2001) that suggested the existence of geographical variation within the range ascribed to *alticola* by Weller (2000). Birds from the northern end of the range differ consistently from birds in the south. This variation was mentioned briefly in Ridgely & Greenfield (2001), but no formal description was published.

Gould (1860) described the form *alticola* from a single specimen presented to him by Jules Bourcier. The specimen was purportedly taken in the 'Puna district of Peru', but because *alticola* has never been documented in Peru, the specimen is unquestionably mislabeled. The type description includes two characters suggestive that the type represents birds from the southern end of the range ascribed to *alticola* by Weller (2000). These are: 'bill black at the tip, the remainder white or flesh colour', and 'four outer ones [rectrices], on each side, washed on their outer edges with bronzy green'. Both characters, however, do vary somewhat in both populations. On the most distinctive difference between the two populations, the colour of the upper belly, Gould described the type of *alticola* as having 'flanks rich bright buff'. Northern birds have the buff confined to a small area on the flanks, whereas in southern birds the buff is much more extensive, meeting or nearly meeting on the upper belly in most specimens, but occasionally with a somewhat wider white area on the middle of the belly. Gould's wording is thus not entirely clear, but an examination by Mark Adams of the type revealed that its uppertail-coverts are washed greenish bronze, and its flanks and sides are decidedly more extensively rich buff (rufous) than in birds from the northern end of the range ascribed to *alticola*. We thus consider it beyond doubt that the name *alticola* applies to the southern population. Birds from the río Jubones drainage in northern Loja and southern Azuay provinces differ consistently to warrant subspecific recognition as a distinct taxon. We name this new form:

Amazilia amazilia azuay subsp. nov.

Holotype.—Museo Ecuatoriano de Ciencias Naturales, Quito (MECN) uncatalogued, collector's no. NK1–4.3.02; adult male collected by N. Krabbe on a semi-humid bushy slope

in the Yunguilla Valley, Azuay Province, Ecuador, at 03°14'S, 79°17'W, elevation 1,650 m, on 4 March 2002. Tissue sample deposited at Zoological Museum, University of Copenhagen (ZMUC 128002). Label data.—Body mass 7.4 g. Irides blackish, upper mandible reddish pink on basal 5 mm on top and basal 3 mm on sides, rest blackish; lower mandible reddish pink with blackish tip (5 mm); feet blackish; testes 2.0 × 1.5 mm (inactive). Mensural data for the holotype and paratypes appear in Table 1.

Paratypes.—Four additional specimens (all in MECN, uncatalogued) were taken along with the holotype in the Yunguilla Valley on 4 and 6 March 2002: collector's no. NK3–4.3.02 (male), NK2–6.3.02 (male), NK1–6.3.02 (immature male) and NK4–4.3.02 (female). Tissue from the paratypes is deposited at ZMUC (128004, 128007, 128006 and 128005, respectively).

Diagnosis.—Differs from *Amazilia a. alticola* by having a nearly pure white belly, the rufous on the sides being restricted to a small area on the lower flanks, by having more extensively and paler rufous in the tail and uppertail-coverts, and, apparently, by having the pink at the base of the upper mandible on average more limited in extent.

Description of holotype.—Colour names and numbers follow Smithe (1975). Crown Leaf Green (146), cheeks, back and wing-coverts between Shamrock Green (162B) and Peacock Green (162C), with a slight bronzy sheen, which is more pronounced on lower back and some feathers of rump, rest of rump, uppertail-coverts and most of tail Kingfisher Rufous (240); central pair of rectrices washed bronze-green on terminal half, next pair with similar wash on edges of terminal half, outer three pairs wholly rufous; greater primary-coverts dusky with slight greenish tinge, remiges dusky; underparts white, chin and throat with sparse golden green discs; neck- and breast-sides, and lesser underwing-coverts of secondaries golden-green, this colour extending as a few discs towards the centre of the lower breast, upper belly with very faint buffy wash; median underwing-coverts of secondaries, flanks and lateral undertail-coverts between Salmon Color (6) and Orange-Rufous (132C); greater underwing-coverts of secondaries, all underwing-coverts of primaries, and underside of remiges dusky.

Variation in the series.—The five specimens (three adult males, one immature male, one adult female) taken at the type locality (Fig. 2) on 4 and 6 March 2002 vary principally in the amount of bronzy green in the rectrices. The fifth (outer) and fourth rectrices are entirely rufous in four specimens, whereas they have a faint and narrow bronzy green fringe and spot near the tip of the outer web in the fifth specimen. The third rectrix is all rufous in two specimens, but in the other three has a 0.5–1.0 mm-wide edge of bronzy green on the terminal 12–14 mm of the outer web. The second and first (central) rectrices vary more greatly and are not alike in any two specimens. On the second the green ranges from covering only a 3-mm tip and tapering anteriorly along the edges of both webs to 14 mm from tip, to covering the entire outer web and the terminal 10 mm of the inner web. The first rectrix is yet darker, with rufous showing only on the basal portion of the feather, in the darkest specimen only as a dark rufous wash along the shaft, in the palest, as rufous covering half of each web to 13 mm from tip.

The rump and uppertail-coverts also vary. Most specimens have entirely rufous uppertail-coverts, but in one there is a wash of greenish bronze on the longest. The rump feathers are generally greenish bronze with narrow rufous fringes, but some of the lateral ones are entirely rufous in some specimens. Four specimens have *c*.5 mm of pink at the base of the upper mandible, whereas the immature male (by the size of its testes), has only a faint reddish wash to the base of the culmen and has the basal 2 mm of the sides of the upper mandible buff. The immature does not differ from the adults in plumage.

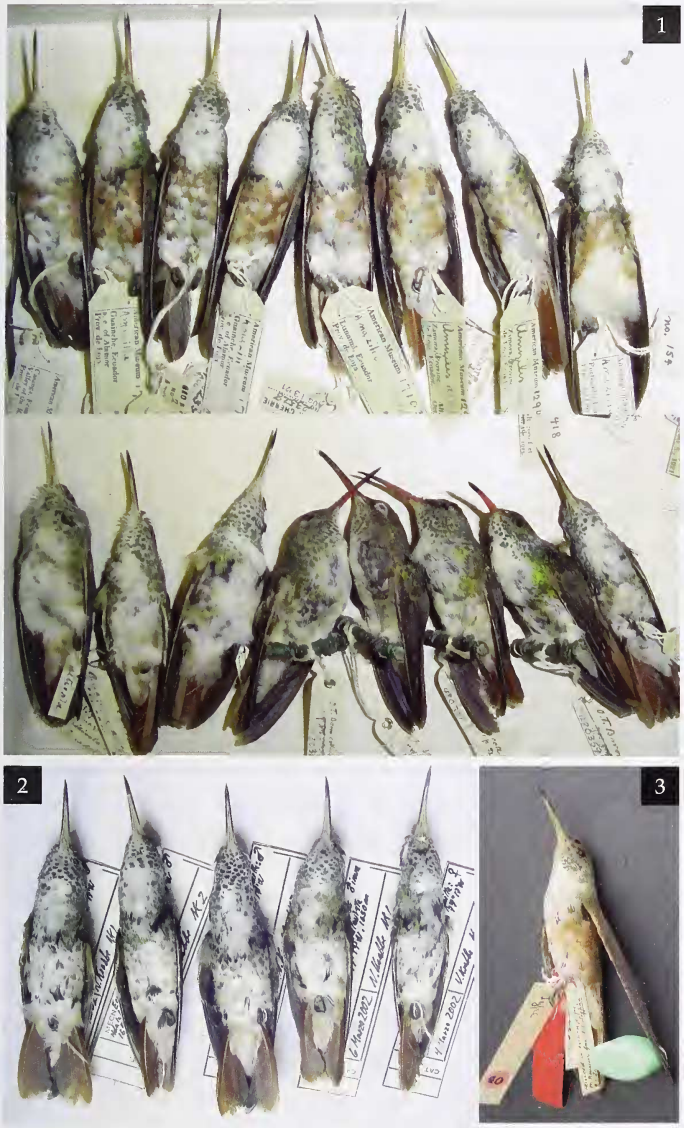

Figure 1. Eight specimens of *Amazilia amazilia alticola* (including some *alticola* / *dumerilii* intergrades) (top) and eight specimens of *Amazilia amazilia azuay* (bottom), held at the American Museum of Natural History, New York (Niels Krabbe)

Figure 2. The topotypical series of *Amazilia amazilia azuay*, the holotype furthest left, held at the Museo Ecuatoriano de Ciencias Naturales, Quito (Niels Krabbe)

Figure 3. Type specimen of *Amazilia amazilia alticola*, held at The Natural History Museum, Tring (BMNH 1888.7.25.139) (Mark P. Adams / © The Natural History Museum, Tring)

Comparison of A. a. azuay with A. a. alticola.—Specimens of *A. a. azuay* differ consistently from *A. a. alticola* in their pale bellies. Variation is considerable in the amount of rufous on the belly in *alticola*; in some specimens the rufous of the sides only meets or nearly meets on the upper belly, whereas in others it extends to cover the entire belly. Even in the palest specimens, the rufous is decidedly brighter and more extensive than in *azuay* (Fig. 1). Like *azuay*, *alticola* varies in the amount of greenish bronze in the tail, and the extremes of the two come close in this respect. As a general rule, however, the greenish bronze in the tail of *alticola* is more extensive than in *azuay*, and the rufous in the tail somewhat darker. The uppertail-coverts of *alticola* are greenish bronze, the lateral ones occasionally rufous, but then darker rufous than in *azuay*, which has entirely rufous uppertail-coverts in most specimens. The amount of pink at the base of the upper mandible appears to average more extensive in *alticola*, but variation in this character is pronounced. None of the type series of

azuay or of birds observed in the field had more than *c*.5 mm of pink. Our field observations of *alticola* indicate that this form frequently has as much as 13–15 mm of pink, but that it occasionally shows as little as *azuay*.

Distribution, habitat and conservation.—*Amazilia a. azuay* appears to be confined to the río Jubones drainage in Azuay and immediately adjacent Loja provinces, south-central Ecuador, at 1,000 to *c*.2,500 m (2,920 m?) (Weller 2000; pers. obs.). Like *alticola*, *azuay* inhabits arid to semi-humid scrub, including heavily disturbed areas and gardens. It is fairly common and tolerates a large degree of disturbance, giving no cause for concern for its survival.

Etymology.—We name this taxon after the province of Azuay, where the type series was taken, and where the majority of the population occurs.

Discussion

The great variation in the amount of rufous on the underparts of *alticola* specimens (Figs. 1 and 3) suggests broad intergradation with the coastal form *dumerilii*. Similarly, variation is great in the amount of greenish bronze in the tail of *alticola* (Chapman 1926, Weller 2000). Both these authors reported an increase in the amount of white on the underparts in *dumerilii* specimens from the coast to specimens from the submontane parts of south-west Ecuador. Chapman considered the submontane population along with *alticola* to represent intergradation between *dumerilii* and *leucophoea* of north-west Peru. Weller, on the other hand, considered the submontane birds a geographic variant of *dumerilii*, and believed that these birds were specifically distinct from *alticola*. He reported mensural differences (mainly tail length) between *dumerilii* and birds he considered to be true *alticola*. He did not, however, give separate measurements of lowland and submontane populations of *dumerilii*, and it is not quite clear how he distinguished submontane birds from *alticola* other than by the length of the central rectrices. He also reported vocal differences between the two, but gave no sample size of the number of recordings examined. In our limited vocal material of *azuay*, *alticola* and coastal populations of *dumerilii* (nine, one and six recordings, respectively), almost every individual is different. We have similarly noted a large repertoire in vocalisations of another species of *Amazilia* (Rufous-tailed Hummingbird *A. tzacatl*). Other species of hummingbirds have been reported to have surprisingly large repertoires as well as local dialects (e.g. Gaunt 1996, González & Ornelas 2005), so we do not consider the vocal differences reported by Weller (2000) sufficiently substantiated to support treating *alticola* as a full species. On present evidence, we cannot rule out that birds from the submontane region are intermediates between *dumerilii* and *alticola* in a broad zone of intergradation and that *azuay* forms the end of such a cline. Great variation in *alticola* and *dumerilii* specimens from a broad zone of intergradation, rather than a dominance of parental types (see Johnson *et al*. 1999, Helbig *et al*. 2002, Patten & Unitt 2002), would support *alticola* being worthy of no more than subspecific rank. In this respect, there would be a stronger case for ranking *azuay* as a full species, as it appears to be geographically isolated under present climatic conditions. Its range is separated from that of *alticola* by the Cordilleras de Chilla, Tioloma and Cordoncillo, between the Jubones, Catamayo and Zamora drainages. The crests of these mountains exhibit more humid conditions than preferred by *azuay*, and no pass lies below the known upper altitudinal limit of this form. Owing to the humid conditions in El Oro and the Pacific slope where the río Jubones cuts through the Andes, it also seems unlikely that *azuay* comes into contact with coastal *dumerilii*. Because *azuay* and *alticola* differ less from each other than do some other subspecies of *A. amazilia*, however, we suggest that *azuay* is best afforded subspecific rank.

TABLE 1

Measurements (in mm) of the type series of Amazilia Hummingbird *Amazilia amazilia azuay*. Compare with measurements of other forms given by Weller (2000).

Collector's no.	Sex	Bill	Wing	Rectrix 1 (central)	Rectrix 5 (outer)
NK1–4.3.02	male (type)	21.5	64.2	32.8	35.2
NK3–4.3.02	Male	20.1	63.2	31.8	35.2
NK2–6.3.02	Male	21.1	60.2	31.7	34.5
NK1–6.3.02	Immature male	22.6	57.1	29.8	32.2
NK4–4.3.02	female	c.22	58.0	33.3	34.2

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APPENDIX

Specimens examined:

A. a. azuay: Yunguilla Valley: 5 males, 1 female (including the holotype); Guishapa, Oña: 1 female; Giron: 1 female. Ten old specimens labelled 'Loja' and 'Ecuador' also appear to belong here.

A. a. alticola or *A. a. alticola / dumerilii* intergrades: Casanga: 1 male, 1 female; Río Zamora: 1 unsexed; Zamora: 2 males; Río Pindo: 1 unsexed; 'Loja' 1 male, 2 unsexed; Guainche: 1 male, 3 unsexed; Lunamá: 2 males, 1 female; Portovelo: 2 males, 3 unsexed.